The paragraph beginning at line 25 of page 30 has been amended as follows:

Figure 11 is a flow chart of procedure for manufacture of microdevices such as semiconductor chips (e.g. ICs or LSIs), liquid crystal panels, CCDs, thin film magnetic heads or micro-machines, for example.

The paragraph beginning at line 21 of page 31 has been amended as follows:

Figure 12 is a flow chart showing details of the wafer process.

IN THE CLAIMS:

Please cancel Claims 7, 8, and 14 to 17 without prejudice or disclaimer of subject matter.

Please re-write the remaining claims to read as follows. Note that all the claims currently pending in this application, including those not presently being amended, have been reproduced below for the Examiner's convenience. A marked-up copy, showing the changes made to the claims, is attached.

1. (Amended) A projection exposure apparatus, comprising:

a projection optical system for projecting a pattern of a first object onto a second object;

a first illumination system for illuminating the pattern of the first object under a first illumination condition, wherein the pattern of the first object illuminated under the first illumination condition is projected onto the second object through said projection optical system;

a second illumination system for performing illumination under a second illumination condition;

a light intensity detector, wherein an image of the pattern of the first object, as the same is illuminated by said second illumination system and under the second illumination condition, is formed through said projection optical system, and wherein said light intensity detector detects a light intensity distribution of the image; and

an information processing system for measuring a wavefront aberration of said projection optical system on the basis of the detection by said light intensity detector;

wherein the first illumination condition concerns spatially partial coherency or incoherency, and wherein said second illumination condition concerns spatially coherency or approximate coherency.

2. (Amended) An apparatus according to Claim 1, wherein said information processing system is arranged to detect a phase distribution of the image of the pattern on the basis of light intensity distributions defined in relation to that image at different positions along an optical axis direction of said projection optical system, and to measure the wavefront aberration of said projection optical system on the basis of the detected phase distribution.

3. (Not Amended From Previous Version) An apparatus according to Claim 1, wherein the second object is a photosensitive substrate, and wherein said projection optical system is used to project and print the transfer pattern, being illuminated under the first illumination condition, onto an exposure region on the photosensitive substrate.

4. (Amended) An apparatus according to Claim 1, wherein said information processing system is arranged to measure the wavefront aberration of said projection optical system on the basis of light intensity distributions detected with respect to an imaging position of the image of the pattern and at least one defocus position of thereof, or of light intensity distributions with respect to different positions.

5. (Not Amended From Previous Version) An apparatus according to Claim 4, wherein said information processing system measures the wavefront aberration of said projection optical system in accordance with a phase restoration method.

6. (Not Amended From Previous Version) An apparatus according to Claim 4, wherein said first and second illumination systems include a common element.

7. (Cancelled)

8. (Cancelled)

9. (Amended) An apparatus according to Claim 1, wherein, in each of said first and second illumination systems, a ratio of a numerical aperture of said first or second illumination system to a numerical aperture of said projection optical system is σ, and wherein the first illumination condition satisfies a relation $0.2 < \sigma \leq 1.0$ while the second illumination condition satisfies a relation $\sigma \leq 0.2$.

10. (Amended) An apparatus according to Claim 1, wherein said first and second illumination systems include a common element.

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~~11.~~ (Amended) A projection exposure apparatus, comprising:

a projection optical system for projecting a pattern of a first object onto a second object;

a first illumination system for illuminating the pattern of the first object under a first illumination condition, wherein the pattern of the first object illuminated under the first illumination condition is projected onto the second object through said projection optical system;

a second illumination system for performing illumination under a second illumination condition;

a light intensity detector, wherein an image of the pattern of the first object, as the same is illuminated by said second illumination system and under the second illumination condition, is formed through said projection optical system, and wherein said light intensity detector detects a light intensity distribution of the image; and

an information processing system for measuring a wavefront aberration of said projection optical system on the basis of the detection by said light intensity detector;

wherein said first and second illumination systems include a common component, and wherein the first and second illumination conditions are defined exchangeably by adding a separate component to said common component or by removing said separate component.

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~~12.~~ (Not Amended From Previous Version) An apparatus according to Claim 8, wherein interchanging the first and second illumination conditions with each other is performed by changing a light source to said common element.

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~~13.~~ (Not Amended From Previous Version) An apparatus according to Claim 1, wherein said first and second illumination systems use different optical systems.

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14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

11
~~18~~. (Not Amended From Previous Version) An apparatus according to Claim 10, wherein said first and second illumination systems use different light sources.

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~~19~~. (Not Amended From Previous Version) An apparatus according to Claim 1, wherein said light intensity detector measures a light intensity distribution in accordance with a knife edge method.

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~~20~~. (Not Amended From Previous Version) An apparatus according to Claim 1, further comprising an enlarging optical system for enlarging a light intensity distribution to be incident on said light intensity detector.

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~~21~~. (Not Amended From Previous Version) An apparatus according to Claim 1, further comprising an adjusting mechanism for adjusting an aberration of said projection optical system on the basis of wavefront aberration information detected by said information processing system.

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~~22~~. (Not Amended From Previous Version) An apparatus according to Claim 1, further comprising means for adjusting an aberration of said projection optical

system, prior to projection of the transfer pattern onto the second object through said projection optical system, on the basis of wavefront aberration information detected by said information processing system and information related to the transfer pattern.

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23. (Not Amended From Previous Version) An apparatus according to Claim 1, wherein said second illumination system is usable for alignment between the first and second objects.

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24. (Amended) A device manufacturing method, comprising the steps of:

performing a projection exposure process for exposing a wafer to a pattern of a reticle, by use of a projection exposure apparatus which includes (i) a projection optical system for projecting a pattern of a first object onto a second object, (ii) a first illumination system for illuminating the pattern of the first object under a first illumination condition, wherein the pattern of the first object illuminated under the first illumination condition is projected onto the second object through said projection optical system, (iii) a second illumination system for performing illumination under a second illumination condition, (iv) a light intensity detector, wherein an image of the pattern of the first object, as the same is illuminated by said second illumination system and under the second illumination condition, is formed through said projection optical system, and wherein said light intensity detector detects a light intensity distribution of the image, and (v) an information processing system for measuring a wavefront aberration of said projection optical system on the basis of the detection by said light intensity detector, wherein said first and second illumination systems include a common component, and wherein the first and second illumination conditions are defined exchangeably by adding a separate component to said common component or by removing said separate component; and

developing the exposed wafer.

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~~25~~. (Not Amended From Previous Version) A method according to Claim 18 ~~24~~, further comprising an adjusting step for adjusting an aberration of the projection optical system on the basis of the detected wavefront aberration.

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